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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,879	04/05/2004	Michio Horiuchi	300.1153	2665
21171	7590	01/18/2008		
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			EXAMINER WALKER, KEITH D	
			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/816,879	Applicant(s) HORIUCHI ET AL.	
	Examiner Keith Walker	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Claim 7 is new and Claims 1-7 are pending examination as discussed below.

Double Patenting

Applicant is advised that should claim 1 be found allowable, claim 7 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-5 & 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP Publication 08-050914 (Iwazawa) in view of JP Publication 06-196176 (Niikura).

Iwazawa teaches a fuel cell device comprising at least two fuel cells that are arranged such that the anode layer of the first fuel cell faces the anode of the second fuel cell with a predetermined space in between (Fig. 4; [0031-0035]). The space is

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open at both ends of the fuel cell. The fuel cell has a fuel supply unit supplying gaseous fuel to the anode electrode.

Iwazawa is silent to a flame formed in the space between the anodes or flat shaped fuel cells.

Niikura teaches using a flame between fuel cells to raise and keep the temperature of the fuel cell at an operational temperature (Abstract, [0019]). The shape of fuel cells in either a tubular or flat plate shape are well known in the art and Niikura teaches it is well known in the art to make a fuel cell in either a tubular or flat shape (Figs 1 & 2). The anode layer is directly exposed to the flame and the cathode is isolated from the flame but exposed to air (Fig. 5; [0019]). The motivation for using the flames is to heat up the fuel cell so an outside power is not needed to warm up the fuel cell ([0011]).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the fuel cell supply unit with the flame-producing unit of Niikura to eliminate the need for extra heating units and improving safety ([0021,0022]).

Iwazawa is silent to the use of a liquid fuel for the fuel cell.

The use of liquid fuels such as methanol and ethanol are well known in the art. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to use a liquid fuel instead of a gaseous fuel, since it has been held to be within the general skill of a worker in the art to select a known material on the

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basis of its suitability for the intended use as a matter of obvious design choice (MPEP 2144.07).

2. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP Publication 08-050914 (Iwazawa) in view of JP Publication 06-196176 (Niikura) as applied to claim 1 and further in view of JP Publication 06-196172 (Okuyama).

The teachings of Iwazawa and Niikura as discussed above are incorporated herein.

Iwazawa and Niikura are silent to the anode comprising nickel oxide and lithium.

Okuyama teaches a solid oxide fuel cell using an anode made of nickel oxide and lithium (Abstract, [0009-0017]). The nickel oxide and lithium anode decreases the voltage drop in the fuel cell by decreasing the internal resistance of the fuel cell ([0006-0008]).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the anode of Iwazawa with the anode of Okuyama to increase the fuel cell performance by decreasing the internal resistance and the voltage drop of the fuel cell.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP Publication 08-050914 (Iwazawa) in view of JP Publication 06-196176 (Niikura) as applied to claim 1 and further in view of US Patent 5,114,803 (Ishihara).

The teachings of Iwazawa and Niikura as discussed above are incorporated herein.

Iwazawa and Niikura are silent to using a liquid fuel.

Ishihara teaches a solid oxide fuel cell that can use any number of fuels such as natural gas, methanol, coal reformed gas and heavy oil (Abstract, 1:5-20).

Iwazawa and Niikura disclose the claimed invention except that gaseous fuel is used instead of a liquid fuel. Ishihara teaches that liquid fuel is an equivalent structure known in the art. Therefore, because these two types of fuel were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute the liquid fuel for the gaseous fuel.

Response to Arguments

Applicant's arguments filed 11/13/07 have been fully considered but they are not persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argues that Niikura is directed to a molten carbon salt type fuel cell. However, Niikura teaches a solid oxide fuel cell in paragraph [0015] and Figure 2.

Applicant argues on page 5 that, "Applicants respectfully submit that FIG. 4 and para. [0034] of Iwazawa describe that the fuel gas passage is kept separate from the oxidation gas passageway where air circulates. Thus, it is not possible for a space defined between adjacent anode (fuel) layers to be where a flame extends because this would require air to circulate in that space as well. As described in para. [0034] of Iwazawa, the fuel passages and the air passages are kept separate. Therefore, Applicants respectfully submit that Iwazawa does not teach or suggest the features of claim 1." It is unclear how this argument shows a lack of teaching by Iwazawa for the new limitation, "said space defined between the adjacent anode layer being an open space at the upper position where the flame extends." As shown in Figures 1-6, the upper and lower spaces are open.

Applicant argues Iwazawa doesn't teach "at least two fuel cells..." and cites Figure 5 of Iwazawa. While Figure 5 shows only one fuel cell, Figure 2 clearly shows two fuel cells. Furthermore, as stated above, the rejection is based on the combined teachings of Niikura and Iwazawa and Niikura also clearly teaches "at least two fuel cells" in Figures 1-6.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith Walker whose telephone number is 571-272-3458. The examiner can normally be reached on Mon. - Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

K. Walker


PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER